

METHOD AND APPARATUS FOR GENERATING SATELLITE TRACKING INFORMATION IN A COMPACT FORMAT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of co-pending U.S. patent application Serial No. 09/915,219, filed July 25, 2001, ^{now U.S. Patent 6,657,000} which incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention generally relates to generating satellite tracking information for earth orbiting satellites. More specifically, the invention relates to a method and apparatus for generating satellite tracking information in a first format (e.g., a compact ephemeris model) through a network or communications link, then representing the satellite tracking information in a second format (e.g., a standard ephemeris model) at a receiver.

Description of the Related Art

[0003] A positioning receiver for the Global Positioning System (GPS) uses measurements from several satellites to compute a position. The process of acquiring the GPS radio signal is enhanced in speed and sensitivity if the GPS receiver has prior access to a model of the satellite orbit and clock. This model is broadcast by the GPS satellites and is known as ephemeris or ephemeris information. Each satellite broadcasts its own ephemeris once every 30 seconds. Once the GPS radio signal has been acquired, the process of computing position requires the use of the ephemeris information.

[0004] The broadcast ephemeris information is encoded in a 900 bit message within the GPS satellite signal. It is transmitted at a rate of 50 bits per second, taking 18 seconds in all for a complete ephemeris transmission. The broadcast ephemeris information is typically valid for 2 to 4 hours into the future (from the time of broadcast). Before the end of the period of validity the GPS receiver must obtain a fresh broadcast ephemeris to continue operating correctly and